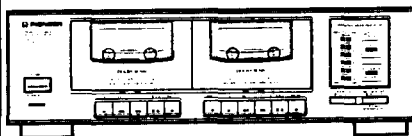


# Service Manual



ORDER NO.  
RRV1068

STEREO DOUBLE CASSETTE DECK

# CT-W103

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Type | Model   | Power Requirement | Remarks |
|------|---------|-------------------|---------|
|      | CT-W103 |                   |         |
| KUXJ | ○       | AC120V            |         |
| KCXJ | ○       | AC120V            |         |

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# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

## WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

## NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

## REMARQUE

(POUR MODELE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

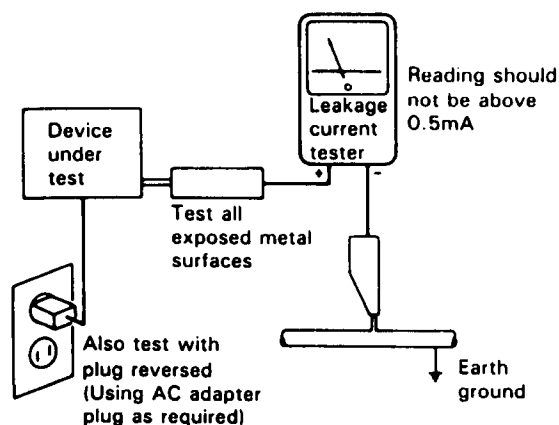
(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

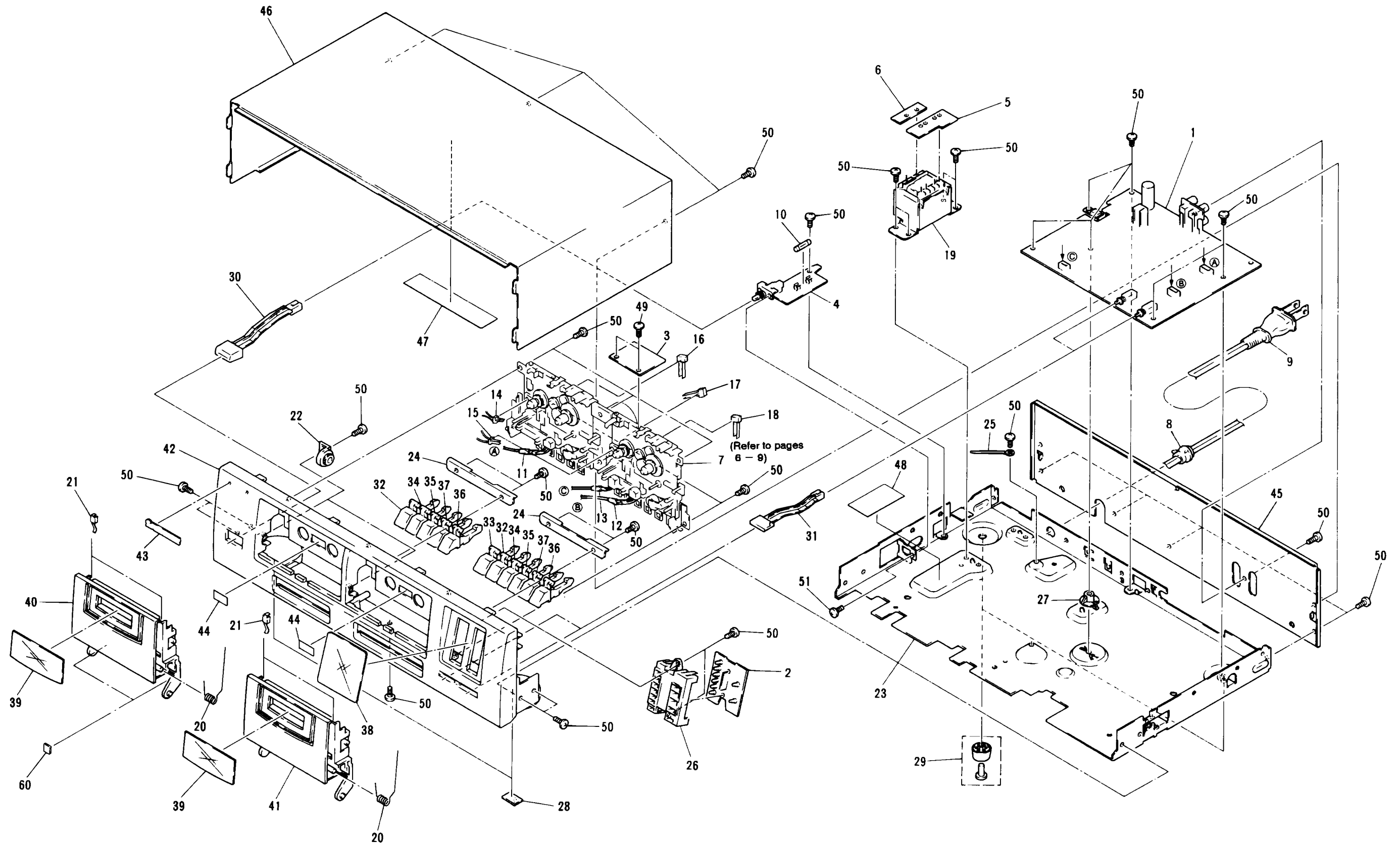
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

## 2. EXPLODED VIEWS, PACKING AND PARTS LIST

### 1. EXTERIOR AND PACKING

NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.



## NOTES:

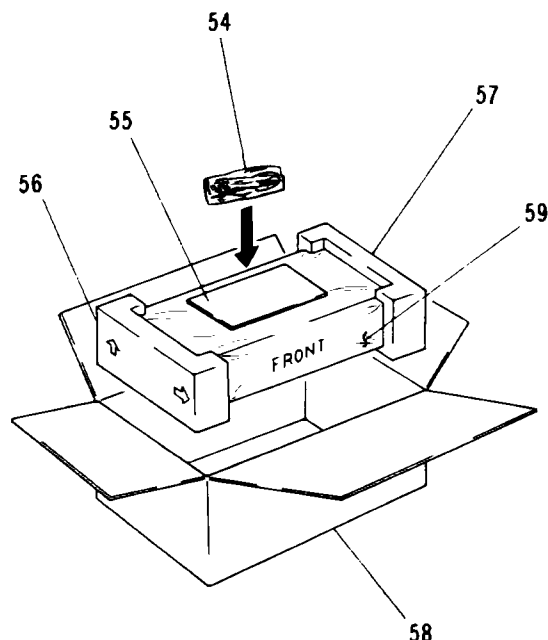
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Parts List

| Mark     | No. | Description               | Part No.  |
|----------|-----|---------------------------|-----------|
|          | 1   | Main Unit                 | RWZ3226   |
| NSP      | 2   | Sub Unit                  | RWZ3227   |
| NSP      | 3   | Mechanism Connection Unit | RWZ3228   |
| NSP      | 4   | Power Switch Unit         | RWZ3229   |
| NSP      | 5   | Transformer 1 Unit        | RWZ3230   |
| NSP      | 6   | Transformer 2 Unit        | RWZ3231   |
|          | 7   | Cassette Mechanism Unit   | RYM1229   |
| $\Delta$ | 8   | Cord Stopper              | CM - 22C  |
| $\Delta$ | 9   | AC Power Cord             | PDG1015   |
| $\Delta$ | 10  | Fuse (1A)                 | REK1057   |
|          | 11  | Connector Assy (3P)       | RKP1672   |
|          | 12  | Connector Assy (3P)       | RKP1673   |
|          | 13  | Connector Assy (2P)       | RKP1681   |
|          | 14  | Leaf Switch (I PLAY)      | RSN1025   |
|          | 15  | Leaf Switch (II PLAY)     | RSN1025   |
|          | 16  | Leaf Switch (MAIN I)      | RSN1025   |
|          | 17  | Leaf Switch (MAIN II)     | RSN1025   |
| $\Delta$ | 18  | Leaf Switch (REC)         | RSN1025   |
|          | 19  | Power Transformer         | RTT1265   |
|          | 20  | Spring R                  | RBH1305   |
|          | 21  | Spring                    | RBK1004   |
|          | 22  | Damper Assy               | REC1241   |
| NSP      | 23  | Chassis                   | RNB1101   |
|          | 24  | Bracket                   | RNE1765   |
|          | 25  | Cord Clamper              | RNH - 184 |
| NSP      | 26  | LED Holder                | RNK2060   |
|          | 27  | Stud                      | RNL - 792 |
|          | 28  | Rubber Sheet              | AEB1111   |
|          | 29  | Supporting Feet           | AXA7010   |
|          | 30  | POWER Knob                | RAC1886   |
|          | 31  | MODE Knob                 | RAC1887   |
|          | 32  | PLAY Knob                 | RAC1888   |
|          | 33  | REC Knob                  | RAC1889   |
|          | 34  | REW Knob                  | RAC1890   |
|          | 35  | FF Knob                   | RAC1891   |
|          | 36  | PAUSE Knob                | RAC1892   |
|          | 37  | STOP Knob                 | RAC1893   |
|          | 38  | Meter Lens                | RAH2387   |
|          | 39  | Door Lens                 | RAH2388   |
|          | 40  | Door L                    | RAH2389   |
|          | 41  | Door R                    | RAH2390   |
|          | 42  | Panel                     | RAH2391   |
|          | 43  | Name Plate                | RAM1007   |
|          | 44  | Indicating Panel          | REE - 113 |
|          | 45  | Panel                     | RNA1795   |
|          | 45  | Panel                     | RNA1796   |
|          |     | (CT - W103/KUXJ)          |           |
|          |     | (CT - W103/KCXJ)          |           |

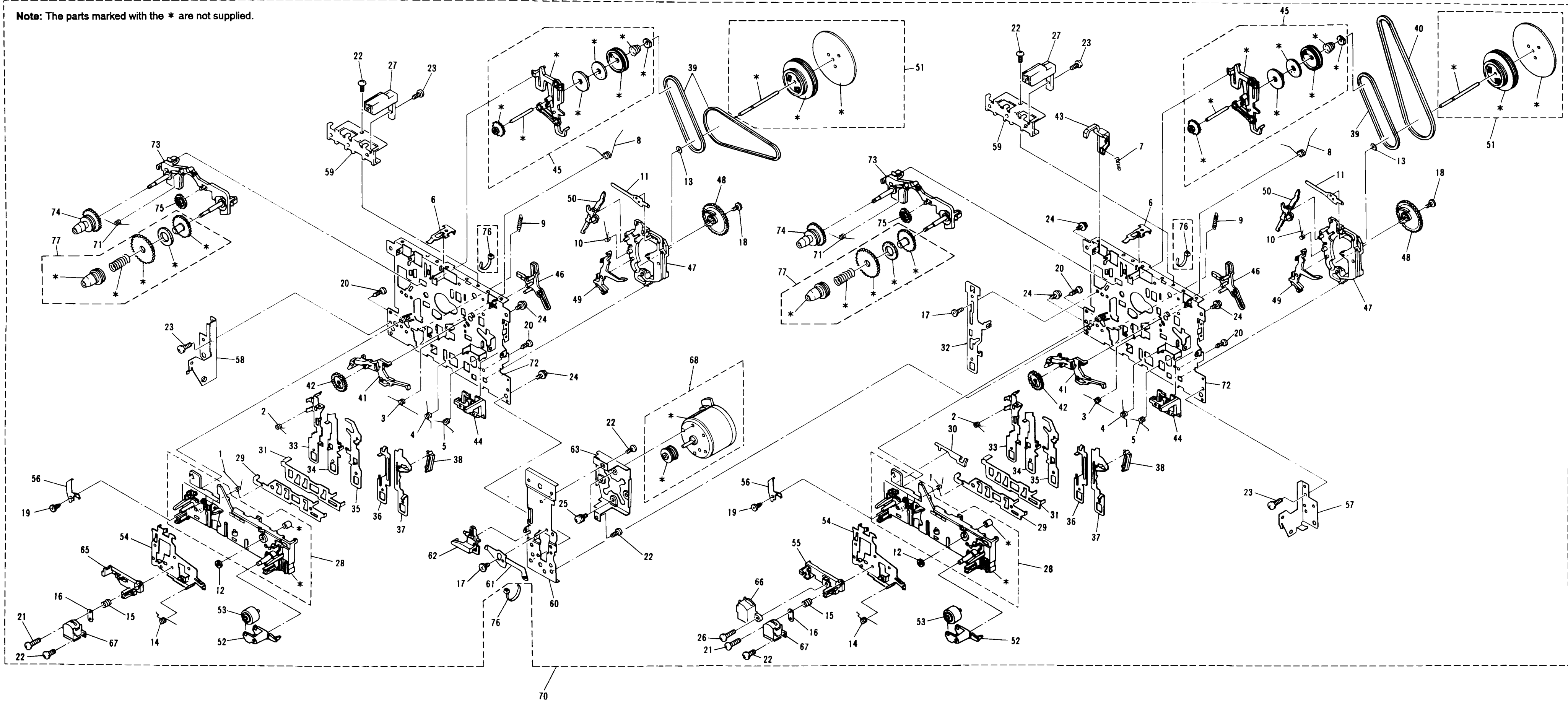
| Mark | No. | Description                       | Part No.     |
|------|-----|-----------------------------------|--------------|
|      | 46  | Bonnet                            | REA1077      |
|      | 47  | 65 Label                          | ORW1069      |
|      |     | (CT - W103/KUXJ Only)             |              |
| NSP  | 48  | Fuse Caution Label                | RRW - 111    |
|      | 49  | Screw                             | BBZ20P060FMC |
|      | 50  | Screw                             | BBZ30P080FMC |
|      | 51  | Screw                             | PMA30P060FMC |
|      | 52  | .....                             |              |
|      | 53  | .....                             |              |
|      | 54  | Connection Assy                   | RDE1036      |
|      | 55  | Operating Instructions            | RRB1140      |
|      |     | (English) (CT - W103/KUXJ)        |              |
|      | 55  | Operating Instructions            | RRE1082      |
|      |     | (English/French) (CT - W103/KCXJ) |              |
|      | 56  | Pad L                             | RHA1056      |
|      | 57  | Pad R                             | RHA1057      |
|      | 58  | Packing Case                      | RHG1590      |
|      |     | (CT - W103/KUXJ)                  |              |
|      | 58  | Packing Case                      | RHG1538      |
|      |     | (CT - W103/KCXJ)                  |              |
|      | 59  | Sheet                             | Z23 - 007    |
|      | 60  | Spacer                            | REC1244      |

## Packing



2. CASSETTE MECHANISM UNIT

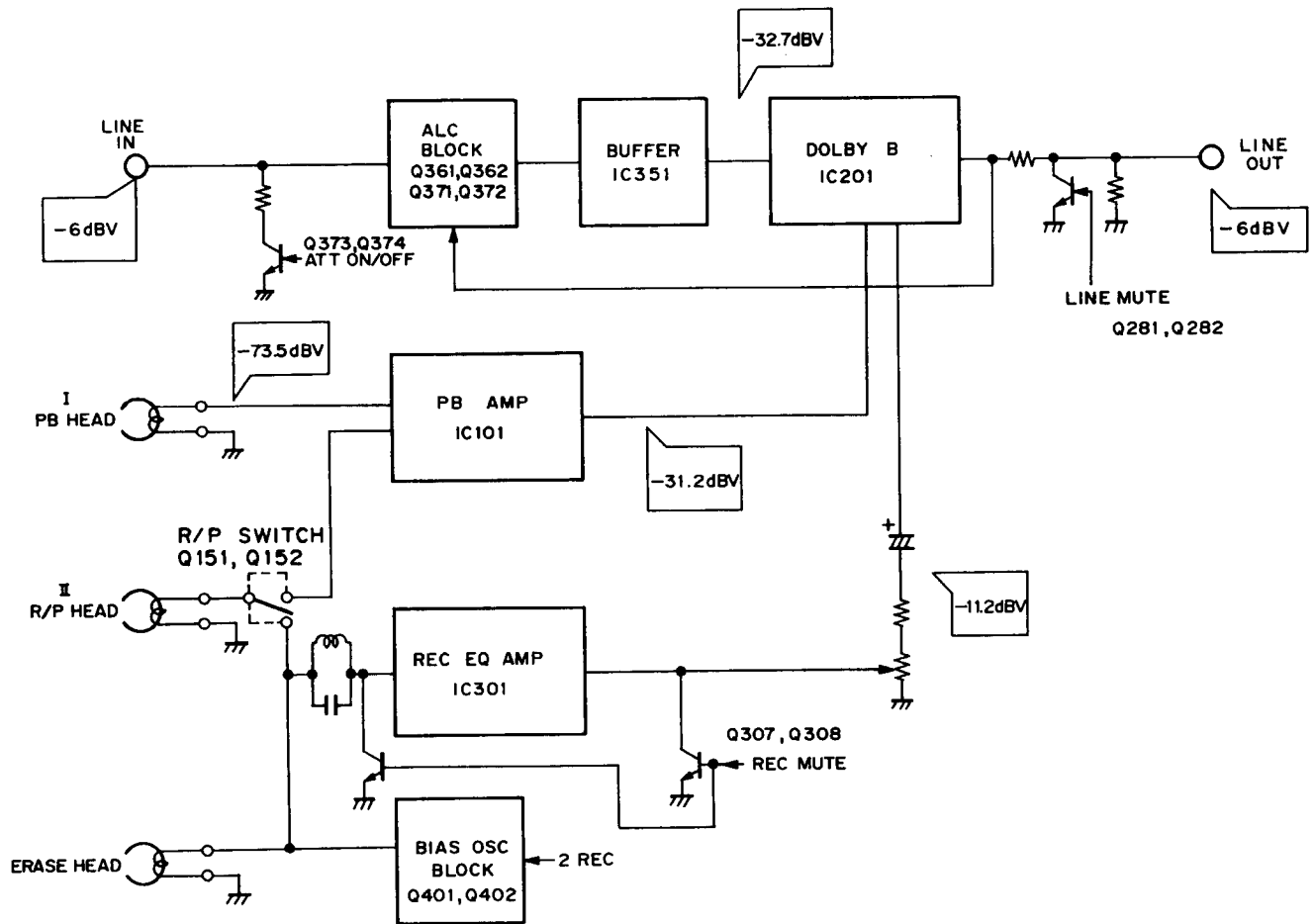
Note: The parts marked with the \* are not supplied.



## Parts List

| Mark | No. | Description      | Part No. | Mark | No. | Description     | Part No.  |
|------|-----|------------------|----------|------|-----|-----------------|-----------|
|      | 1   | Spring           | AZB1336  |      | 51  | FW Assy         | AZN2153   |
|      | 2   | Spring           | AZB1337  |      | 52  | Pinch Arm       | AZN2157   |
|      | 3   | Spring           | AZB1338  |      | 53  | Pinch Roller    | AZN2158   |
|      | 4   | Spring           | AZB1339  |      | 54  | Head Base       | AZN2159   |
|      | 5   | Spring           | AZB1340  |      | 55  | Head Holder     | AZN2160   |
|      | 6   | Cassette Spring  | AZB1343  |      | 56  | Switch Plate    | AZN2162   |
|      | 7   | Spring           | AZB1344  |      | 57  | Button R Holder | AZN2163   |
|      | 8   | Spring           | AZB1346  |      | 58  | Button L Holder | AZN2164   |
|      | 9   | Spring           | AZB1347  |      | 59  | Plate SW        | RNE1790   |
|      | 10  | Spring           | AZB1348  |      | 60  | Connect Plate   | AZN2166   |
|      | 11  | Plate Spring     | AZB1349  |      | 61  | Connect Arm     | AZN2167   |
|      | 12  | Washer           | AZB1350  |      | 62  | Release Arm     | AZN2168   |
|      | 13  | Washer           | AZB1351  |      | 63  | Motor Holder    | AZN2246   |
|      | 14  | Spring           | AZB1352  |      | 64  | .....           |           |
|      | 15  | Spring           | AZB1353  |      | 65  | Tape Guide      | AZN2174   |
|      | 16  | Earth Lug        | AZB1354  |      | 66  | E Head          | AZP1025   |
|      | 17  | Screw            | AZB1355  |      | 67  | R/P Head        | AZP1036   |
|      | 18  | Screw            | AZB1356  |      | 68  | Motor Assy      | AZX1037   |
|      | 19  | Screw            | AZB1357  |      | 69  | .....           |           |
|      | 20  | Screw            | AZB1358  |      | 70  | Cassette Mecha  | RYM1229   |
|      | 21  | Screw            | AZB1359  |      | 71  | Spring          | AZB1342   |
|      | 22  | Screw            | AZB1360  |      | 72  | Chassis         | AZN2112   |
|      | 23  | Screw            | AZB1361  |      | 73  | Spindle Base    | AZN2130   |
|      | 24  | Screw            | AZB1362  |      | 74  | S Reel          | AZN2136   |
|      | 25  | Screw            | AZB1363  |      | 75  | FF Idler        | AZN2137   |
|      | 26  | Screw            | AZB1364  | NSP  | 76  | Nylon Binder    | Z09 - 057 |
|      | 27  | Reaf SW (CRO)    | RSN1024  |      | 77  | T Reel Assy     | AZN2131   |
|      | 28  | Frame Assy       | AZN2113  |      |     |                 |           |
|      | 29  | Function Plate   | AZN2116  |      |     |                 |           |
|      | 30  | REC Stopper      | AZN2117  |      |     |                 |           |
|      | 31  | SW Lever         | AZN2118  |      |     |                 |           |
|      | 32  | REC Lever        | AZN2119  |      |     |                 |           |
|      | 33  | PLAY Lever       | AZN2120  |      |     |                 |           |
|      | 34  | REW Lever        | AZN2121  |      |     |                 |           |
|      | 35  | FF Lever         | AZN2122  |      |     |                 |           |
|      | 36  | SE Lever         | AZN2123  |      |     |                 |           |
|      | 37  | PAUSE Lever      | AZN2124  |      |     |                 |           |
|      | 38  | PAUSE Arm        | AZN2125  |      |     |                 |           |
|      | 39  | Belt             | AZN2126  |      |     |                 |           |
|      | 40  | Belt             | AZN2127  |      |     |                 |           |
|      | 41  | P Idler Arm      | AZN2128  |      |     |                 |           |
|      | 42  | PL Idler         | AZN2129  |      |     |                 |           |
|      | 43  | Inter Lock       | AZN2138  |      |     |                 |           |
|      | 44  | Eject Lever      | AZN2139  |      |     |                 |           |
|      | 45  | PF FF Idler Assy | AZN2140  |      |     |                 |           |
|      | 46  | Senser           | AZN2148  |      |     |                 |           |
|      | 47  | AS Base          | AZN2149  |      |     |                 |           |
|      | 48  | Cam Gear         | AZN2150  |      |     |                 |           |
|      | 49  | Senser Lever     | AZN2151  |      |     |                 |           |
|      | 50  | Control Lever    | AZN2152  |      |     |                 |           |

### 3. BLOCK DIAGRAM



## a

2



• This diagram is viewed from the mounted parts side.

A

B

C

D

POWER SWITCH UNIT

MAIN UNIT

TO MECHANISM UNIT  
(1/4) (R/P HEAD)

TRANSFORMER  
1 UNIT

TRANSFORMER  
2 UNIT

AC POWER CORD  
AC120V 60Hz

POWER  
TRANSFORMER  
RTT1265

Q371  
Q283 Q372  
Q281 Q373  
IC351 Q374  
Q282 Q361  
Q362

Q201  
IC602 Q102

IC201 Q101  
IC601

Q105  
Q106  
Q311 Q103  
Q307 Q104

Q506 Q308  
Q509

Q507 IC101  
Q508 IC301

IC501 Q107  
Q513 Q405 Q109

Q510 Q305 Q108  
Q304 Q151

Q511 Q153 Q152  
Q505 Q303 Q154 Q155

Q304 Q151  
Q504 Q309 Q156  
Q403 Q310 Q157

Q401 Q301 Q302  
Q402

Q502  
Q501  
Q503

VR103  
VR104  
VR101  
VR102

VR301  
VR302

VR501

VR401  
VR402

NOTE FOR PCB DIAGRAMS:

- 1. Part numbers in PCB diagrams match those in the schematic diagrams.
- 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

| Symbol in PCB Diagrams | Symbol in Schematic Diagrams | Part Name                |
|------------------------|------------------------------|--------------------------|
|                        |                              | Transistor               |
|                        |                              | Transistor with resistor |
|                        |                              | Field effect transistor  |
|                        |                              | Resistor array           |
|                        |                              | 3-terminal regulator     |

TO MECHANISM UNIT  
(4/4)

TO MECHANISM UNIT  
(3/4) (E. HEAD)

TO MECHANISM UNIT  
(4/4)  
(MOTOR ASSY)  
TO MECHANISM UNIT  
(4/4)

TO MECHANISM UNIT  
(2/4) (R/P HEAD)

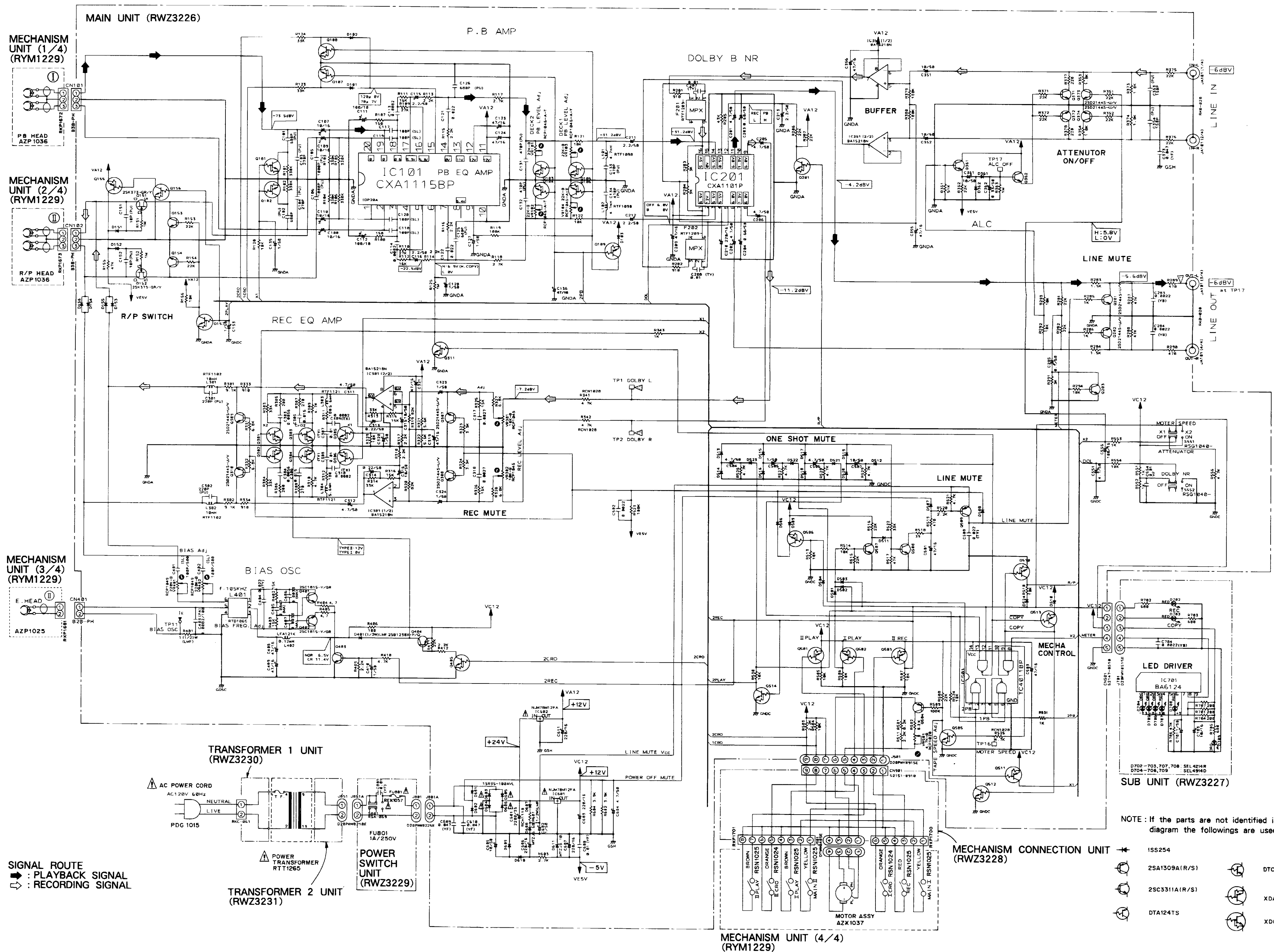
MECHANISM CONNECTION  
UNIT

SUB UNIT

IC701

# 5. SCHEMATIC DIAGRAM

CT-W103



6. PCB PARTS LIST

- NOTES:
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
  - The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Parts marked by “ $\odot$ ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
  - When ordering resistors, first convert resistance values into code form as shown in the following examples.
- Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
- 560  $\Omega$   $\rightarrow$  56  $\times 10^1 \rightarrow$  561 ..... RD1/8PM  $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$  J  
47k  $\Omega$   $\rightarrow$  47  $\times 10^3 \rightarrow$  473 ..... RD1/4PS  $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$  J  
0.5  $\Omega$   $\rightarrow$  0R5 ..... RN2H  $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$  K  
1  $\Omega$   $\rightarrow$  010 ..... RS1P  $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$  K
- Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- 5.62k  $\Omega$   $\rightarrow$  562  $\times 10^1 \rightarrow$  5621 ..... RN1/4PC  $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$  F

| Mark               | No.                        | Description  | Part No.   | Mark | No.        | Description | Part No.  |
|--------------------|----------------------------|--------------|------------|------|------------|-------------|-----------|
| LIST OF ASSEMBLIES |                            |              |            |      |            |             |           |
| NSP                | MOTHER UNIT                |              | RWM1699    |      |            |             |           |
|                    | └MAIN UNIT                 |              | RWZ3226    |      |            |             |           |
|                    | └SUB UNIT                  |              | RWZ3227    |      |            |             |           |
| NSP                | └MECHANISM CONNECTION UNIT |              | RWZ3228    |      |            |             |           |
| NSP                | └POWER SWITCH UNIT         |              | RWZ3229    |      |            |             |           |
| NSP                | └TRANSFORMER 1 UNIT        |              | RWZ3230    |      |            |             |           |
| NSP                | └TRANSFORMER 2 UNIT        |              | RWZ3231    |      |            |             |           |
| MAIN UNIT          |                            |              |            |      |            |             |           |
| SEMICONDUCTORS     |                            |              |            |      |            |             |           |
|                    | IC101                      | PB-BQ AMP IC | CKA1115BP  |      | Q506       | TRANSISTOR  | XDA124ES  |
|                    | IC201                      | DOLBY B IC   | CKA1101P   |      | Q507, Q508 | TRANSISTOR  | 2SC3311A  |
|                    | IC301, IC351               | IC           | BA15218N   |      | Q509       | TRANSISTOR  | 2SA1309A  |
|                    | IC501                      | LOGIC IC     | TC4011BP   |      | Q510       | TRANSISTOR  | XDC124ES  |
| $\Delta$           | IC601, IC602               | REGULATOR IC | NJM78M12PA |      | Q511       | TRANSISTOR  | XDA124ES  |
|                    |                            |              |            |      | Q512       | TRANSISTOR  | XDC124ES  |
|                    |                            |              |            |      | Q513       | TRANSISTOR  | XDA124ES  |
|                    |                            |              |            |      | Q514       | TRANSISTOR  | XDC124ES  |
|                    | Q101-Q108                  | TRANSISTOR   | XDC124ES   |      | D101-D103  | DIODE       | 1SS254    |
|                    | Q109                       | TRANSISTOR   | XDA124ES   |      | D151-D156  | DIODE       | 1SS254    |
|                    | Q151, Q152                 | N-FET        | 2SK373     |      | D361, D362 | DIODE       | 1SS254    |
|                    | Q153, Q154                 | TRANSISTOR   | 2SC3311A   |      | D401, D501 | DIODE       | 1SS254    |
|                    | Q155                       | TRANSISTOR   | XDA124ES   |      | D502-D504  | DIODE       | 1SS254    |
|                    | Q156, Q157                 | TRANSISTOR   | XDC124ES   |      | D506-D524  | DIODE       | 1SS254    |
|                    | Q201                       | TRANSISTOR   | XDC124ES   |      | D601, D602 | DIODE       | 1SS254    |
|                    | Q281, Q282                 | TRANSISTOR   | 2SD2144S   |      | D603-D606  | DIODE       | 1SS254    |
|                    | Q283                       | TRANSISTOR   | 2SC3311A   |      | D607       | DIODE       | 1SS254    |
|                    | Q301-Q306                  | TRANSISTOR   | XDC124ES   |      | D608       | ZENER DIODE | MTZJ5, 6B |
|                    | Q307-Q310                  | TRANSISTOR   | 2SD2144S   |      | D609, D610 | DIODE       | 1SS254    |
|                    | Q311                       | TRANSISTOR   | XDC124ES   |      | D611       | ZENER DIODE | MTZJ5, 1B |
|                    | Q361, Q362                 | TRANSISTOR   | 2SC3311A   |      |            |             |           |
|                    | Q371, Q372                 | TRANSISTOR   | 2SC3311A   |      |            |             |           |
|                    | Q373, Q374                 | TRANSISTOR   | 2SD2144S   |      |            |             |           |
|                    | Q401, Q402                 | TRANSISTOR   | 2SC1815    |      |            |             |           |
|                    | Q403                       | TRANSISTOR   | 2SC3311A   |      |            |             |           |
|                    | Q404                       | TRANSISTOR   | 2SB1238X   |      |            |             |           |
|                    | Q405                       | TRANSISTOR   | XDC124ES   |      |            |             |           |
|                    | Q501-Q503                  | TRANSISTOR   | XDA124ES   |      |            |             |           |
|                    | Q504                       | TRANSISTOR   | 2SA1309A   |      |            |             |           |
|                    | Q505                       | TRANSISTOR   | XDC124ES   |      |            |             |           |

| Mark | No.        | Description                 | Part No.     |
|------|------------|-----------------------------|--------------|
|      | C121, C122 | AUDIO FILM CAPACITOR        | CFTYA223J50  |
|      | C123, C124 | ELECT. CAPACITOR            | CEAS470M16   |
|      | C125, C126 | AXIAL CAPACITOR             | CKPUYB681K50 |
|      | C127, C128 | ELECT. CAPACITOR            | CEAS010M50   |
|      | C131-C134  | AXIAL CAPACITOR             | CKPUYB471K50 |
|      | C135       | ELECT. CAPACITOR            | CEAS010M50   |
|      | C136       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C151, C152 | AXIAL CAPACITOR             | CCPUSL100J50 |
|      | C153       | ELECT. CAPACITOR            | CEAS010M50   |
|      | C201, C202 | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C203, C204 | ELECT. CAPACITOR            | CEASR68M50   |
|      | C205, C206 | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C207, C208 | AUDIO FILM CAPACITOR        | CFTYA103J50  |
|      | C209       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C210       | ELECT. CAPACITOR            | CEAS221M16   |
|      | C211-C213  | ELECT. CAPACITOR            | CEAS2R2M50   |
|      | C283, C284 | CERAMIC CAPACITOR           | CKCYB222K50  |
|      | C285       | ELECT. CAPACITOR            | CEASR10M50   |
|      | C301, C302 | AXIAL CAPACITOR             | CKPUYB221K50 |
|      | C303, C304 | CERAMIC CAPACITOR           | CGCYX562K25  |
|      | C305, C306 | CERAMIC CAPACITOR           | CGCYX153K25  |
|      | C307, C308 | AUDIO FILM CAPACITOR        | CFTYA103J50  |
|      | C309, C310 | AUDIO FILM CAPACITOR        | CFTXA822J50  |
|      | C311, C312 | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C313, C314 | ELECT. CAPACITOR            | CEASR22M50   |
|      | C315, C316 | ELECT. CAPACITOR            | CEAS100M50   |
|      | C317, C318 | CERAMIC CAPACITOR           | CGCYX272K25  |
|      | C319       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C320       | ELECT. CAPACITOR            | CEAS010M50   |
|      | C321       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C323, C324 | ELECT. CAPACITOR            | CEAS010M50   |
|      | C351, C352 | ELECT. CAPACITOR            | CEAS100M50   |
|      | C353, C354 | CERAMIC CAPACITOR           | CKPUYB151K50 |
|      | C355, C356 | ELECT. CAPACITOR            | CEAS470M16   |
|      | C361       | ELECT. CAPACITOR            | CEAS100M50   |
|      | C362       | ELECT. CAPACITOR            | CEASR33M50   |
|      | C373       | CERAMIC CAPACITOR           | CKCYF473Z50  |
|      | C401, C402 | CERAMIC CAPACITOR           | CCCSL101K500 |
|      | C403       | PL. PROPYLENE CAPACIT       | CQPAB22J100  |
|      | C404       | AUDIO FILM CAPACITOR        | CFTYA223J50  |
|      | C405       | PLASTIC FILM CAPACITOR      | CQMA472J50   |
|      | C406, C407 | PLASTIC FILM CAPACITOR      | CQMA332J50   |
|      | C408, C409 | ELECT. CAPACITOR            | CEAS470M16   |
|      | C410       | ELECT. CAPACITOR            | CEAS010M50   |
|      | C501       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C502       | CERAMIC CAPACITOR           | CKCYB222K50  |
|      | C503       | ELECT. CAPACITOR            | CEAS470M16   |
|      | C504       | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C505       | ELECT. CAPACITOR            | CEAS010M50   |
|      | C506       | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C507       | ELECT. CAPACITOR            | CEAS100M50   |
|      | C508       | AUDIO FILM CAPACITOR        | CFTYA223J50  |
|      | C551       | ELECT. CAPACITOR            | CEAS4R7M50   |
|      | C554       | CERAMIC CAPACITOR           | CKCYF103Z50  |
|      | C555       | ELECT. CAPACITOR            | CEAS101M16   |
|      | C601       | ELECT. CAPACITOR (2200/35V) | RCH1118      |
|      | C602       | ELECT. CAPACITOR            | CEAS010M50   |

| Mark           | No.               | Description                       | Part No.                            |
|----------------|-------------------|-----------------------------------|-------------------------------------|
|                | C603              | ELECT. CAPACITOR                  | CEAS221M16                          |
|                | C604              | ELECT. CAPACITOR                  | CEAS4R7M50                          |
|                | C605              | ELECT. CAPACITOR                  | CEAS100M50                          |
|                | C606, C607        | ELECT. CAPACITOR                  | CEAS221M16                          |
|                | C608              | CERAMIC CAPACITOR                 | CKCYF103Z50                         |
|                | C609, C610        | CERAMIC CAPACITOR                 | CKCYF473Z50                         |
|                | C611              | ELECT. CAPACITOR                  | CEAS221M16                          |
| RESISTORS      |                   |                                   |                                     |
|                | R341, R342        | CARBON FILM RESISTOR (4.7K)       | RCN1028                             |
|                | R401              | CARBON FILM RESISTOR              | RD1/2LFW010J                        |
|                | R406              | CARBON FILM RESISTOR              | RD1/2LWF101J                        |
|                | R525              | CARBON FILM RESISTOR (4.7K)       | RCN1028                             |
|                | R601              | CARBON FILM RESISTOR (See T50002) | RD1/2LWF102J                        |
|                | R502 (See T50002) |                                   | RB1/6FM1512J                        |
|                | VR101-VR104       | VR(22K)                           | RCP1046                             |
|                | VR301, VR302      | VR(10K)                           | RCP1045                             |
|                | VR401, VR402      | VR(220K)                          | RCP1049                             |
|                | VR501             | VR(4.7K) (See T50002)             | RCP1020 $\rightarrow$ RCP1045       |
|                | OTHER RESISTORS   |                                   | RD1/6PM $\square \square \square$ J |
| OTHERS         |                   |                                   |                                     |
|                | CN101, CN102      | CONNECTOR POST                    | B3B-PH-K                            |
|                | CN401             | CONNECTOR POST                    | B2B-PH-K                            |
|                | CN501             | SP JUMPER CONNECTOR               | S2147-0510                          |
|                | JA101             | JACK                              | RKB-020                             |
|                | EARTH PLATE       |                                   | VNF-091                             |
| SUB UNIT       |                   |                                   |                                     |
| SEMICONDUCTORS |                   |                                   |                                     |
|                | IC701             | LINEAR IC                         | BA6124                              |
|                | D702, D703        | LED                               | SEL4214R                            |
|                | D704-D706         | LED                               | SEL4914D                            |
|                | D707, D708        | LED                               | SEL4214R                            |
|                | D709              | LED                               | SEL4914D                            |
| CAPACITORS     |                   |                                   |                                     |
|                | C701              | ELECT. CAPACITOR                  | CEAS010M50                          |
|                | C703              | ELECT. CAPACITOR                  | CEAS100M16                          |
|                | C704              | CERAMIC CAPACITOR                 | CKCYB222K50                         |

|           |              |                                     |
|-----------|--------------|-------------------------------------|
| RESISTORS | ALL RESISTOR | RD1/6PM $\square \square \square$ J |
|-----------|--------------|-------------------------------------|

MECHANISM CONNECTION UNIT

|        |       |                    |            |
|--------|-------|--------------------|------------|
| OTHERS | CN901 | 3PJUMPER CONNECTOR | S2151-0910 |
|--------|-------|--------------------|------------|

POWER SWITCH UNIT

|                     |               |        |         |
|---------------------|---------------|--------|---------|
| SWITCHES AND RELAYS | $\Delta$ S801 | SWITCH | RSA-069 |
|---------------------|---------------|--------|---------|

|            |      |                   |             |
|------------|------|-------------------|-------------|
| CAPACITORS | C801 | CERAMIC CAPACITOR | CKCYF103Z50 |
|------------|------|-------------------|-------------|

|        |                   |  |         |
|--------|-------------------|--|---------|
| OTHERS | $\Delta$ TERMINAL |  | RKC-061 |
|--------|-------------------|--|---------|

TRANSFORMER 1 UNIT

This unit has no service parts.

TRANSFORMER 2 UNIT

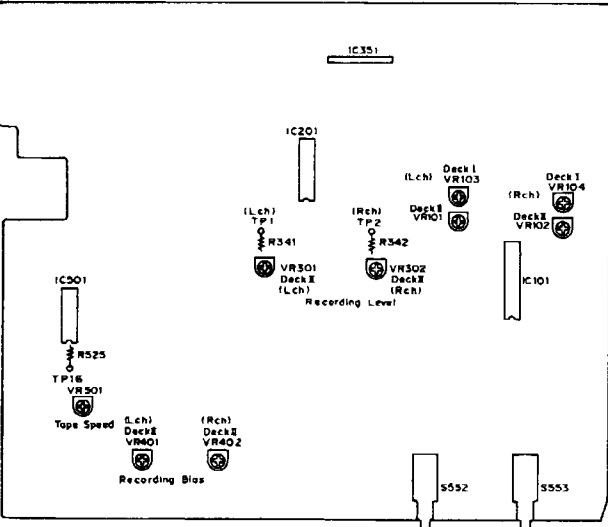
This unit has no service parts.

7. ADJUSTMENTS

7.1 MECHANICAL ADJUSTMENT

| 1. Tape Speed Adjustment and Check |      |                   |                                     |                                                                                                           |                  |
|------------------------------------|------|-------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------|
| No.                                | Deck | Mode              | Input signal & test tape            | Adjustment location                                                                                       | Adjustment value |
| -                                  | -    | _____             | Play back<br>STD-301<br><br>(3 kHz) | Terminate the test point (TP16) at GND using the short-pin, and press the PLAY buttons of DECKs I and II. |                  |
| 1                                  | I    | Double speed PLAY |                                     | Check                                                                                                     | 6000 Hz ± 600 Hz |
| 2                                  | II   |                   |                                     | Remove the short-pin from the test point (TP16) at the beginning of FWD of DECK II.                       |                  |
| -                                  | -    | _____             |                                     | VR501                                                                                                     | 3000Hz ± 5Hz     |
| 3                                  | II   | Normal speed PLAY |                                     |                                                                                                           |                  |

MAIN UNIT



## 7.2 ELECTRICAL ADJUSTMENTS

### Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0 dBV=1 Vrms.
5. Connect a 10 k $\Omega$  load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.

DOLBY NR : OFF

### Test Tapes

STD-331E : Playback adjustments  
(See Fig. 7-4)  
STD-631 or STD-632 : NORMAL blank tape  
STD-621 : CrO<sub>2</sub> blank tape

### List of Adjustments

#### Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

#### Recording sections

1. Recording bias adjustment.
2. Recording level adjustment.
3. Level meter check.

*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
"DOLBY" and the double-D symbol  $\square$  are trademarks of Dolby Laboratories Licensing Corporation.*

NOTE: This unit has an automatic tape selection feature.

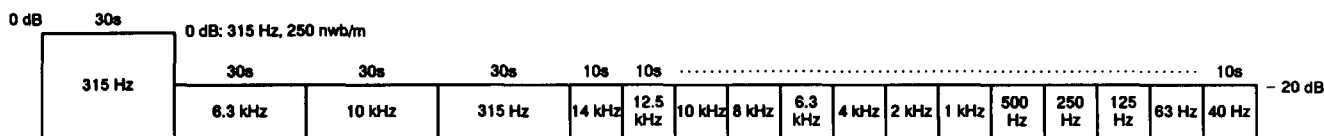
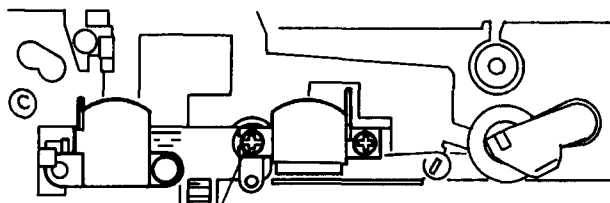


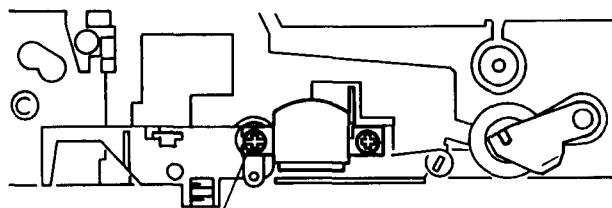
Fig. 7-4 Constants of the test tape STD-331E

#### Deck II



Head azimuth adjustment screw

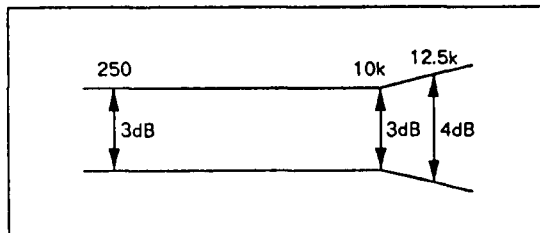
#### Deck I



Head azimuth adjustment screw

Fig. 7-5 Head azimuth adjustment

#### PLAY BACK



#### RECORDING

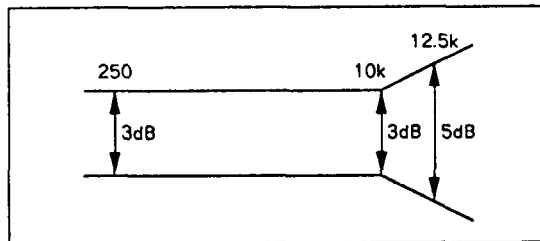


Fig. 7-6 Frequency response zone

## PLAYBACK SECTION

### 1. Head Azimuth Adjustment

- Turn VR101, 102 (Deck II) or VR103, 104 (Deck I) to mechanical center positions.

| No. | Mode | Input signal & test tape                                    | Adjustment location                              | Measuring location | Adjustment value               | Remarks |
|-----|------|-------------------------------------------------------------|--------------------------------------------------|--------------------|--------------------------------|---------|
| 1.  | PLAY | Play the 10 kHz/-20 dB section of STD-331E test tape.       | Head azimuth adjustment screw.<br>(See Fig. 7-5) | LINE OUT           | Maximum playback signal level. |         |
| 2.  | STOP | Lock the screw with screw lock after completing adjustment. |                                                  |                    |                                |         |

### 2. Playback Level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

| No. | Mode | Input signal & test tape                                | Adjustment location | Measuring location           | Adjustment value           | Remarks   |
|-----|------|---------------------------------------------------------|---------------------|------------------------------|----------------------------|-----------|
| 1.  | PLAY | Play the 315 Hz/0 dB section of the STD-331E test tape. | Deck I              | VR 103 (Lch)<br>VR 104 (Rch) | TP. 1 (Lch)<br>TP. 2 (Rch) | -10.7 dBV |
|     |      |                                                         | Deck II             | VR 101 (Lch)<br>VR 102 (Rch) |                            |           |

## RECORDING SECTION

### 1. Recording Bias Adjustment

| No. | Mode          | Input signal & test tape                                                                               | Adjustment location | Measuring location         | Adjustment value | Remarks                                                                                                                                                |
|-----|---------------|--------------------------------------------------------------------------------------------------------|---------------------|----------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | STOP          | Set the TAPE SELECTOR switch to the NORM position.                                                     |                     |                            |                  |                                                                                                                                                        |
| 2.  | REC →<br>PLAY | Load the STD-631 test tape. Record the 315 Hz and 6.3 kHz signals at -20 dBV input level and playback. | Deck II             | VR401 (Lch)<br>VR402 (Rch) | LINE OUT         | Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB $\pm$ 0.5 dB when compared with the 315 Hz signal. |

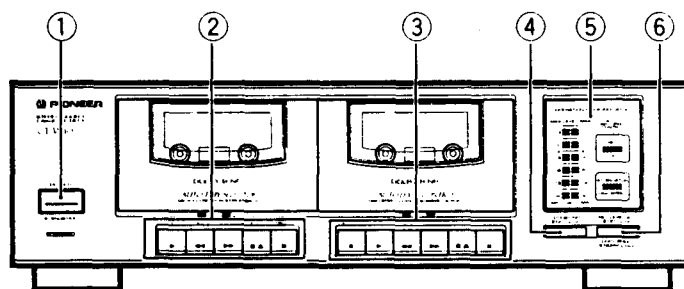
### 2. Recording Level Adjustment

| No. | Mode          | Input signal & test tape                                                                  | Adjustment location                          |                            | Measuring location         | Adjustment value                                                                            | Remarks |
|-----|---------------|-------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------|----------------------------|---------------------------------------------------------------------------------------------|---------|
| 1.  | REC/<br>PAUSE | Apply a 315 Hz signal to the line input terminals, load the STD-631 or STD-632 test tape. | Volume of the output level of the oscillator |                            | TP. 1 (Lch)<br>TP. 2 (Rch) | -11.2 dBV                                                                                   |         |
| 2.  | REC →<br>PLAY | Record the above signal onto the STD-631 or STD-632 test tape, and playback.              | Deck II                                      | VR301 (Lch)<br>VR302 (Rch) |                            | Repeatedly record, playback and adjust so that the playback signal level becomes -11.2 dBV. |         |
| 3.  | REC →<br>PLAY | Record the above signal onto the STD-621 test tape, and playback.                         | Check                                        |                            |                            | -11.2 dBV ± 1.5 dB                                                                          |         |

### 3. Level Meter Check

| No. | Mode          | Input signal & test tape                                         | Adjustment location                           | Measuring location | Adjustment value           | Remarks                                                                                             |
|-----|---------------|------------------------------------------------------------------|-----------------------------------------------|--------------------|----------------------------|-----------------------------------------------------------------------------------------------------|
| 1.  | REC/<br>PAUSE | Apply a 315 Hz/-6 dBV (0.5V) signal to the Line Input terminals. | Volume of the output level of the oscillator. |                    | TP. 1 (Lch)<br>TP. 2 (Rch) | Check that the level meters "0 dB" light up within -11.2 dBV $\pm$ 2 dB of the signal output level. |

## 8. PANEL FACILITIES



### ① POWER (STANDBY/ON) switch

#### NOTE:

The POWER switch activates the secondary transformer only. Even when the switch is in the STANDBY position, there will be a power flow to the deck's circuits as long as the power cord is connected to a power outlet.

### ② Deck I operation buttons

- ▶ (PLAY) : Playback
- ◀◀ (REW) : Rewind
- ▶▶ (FF) : Fast forward
- /▲ (STOP/EJECT) : Stop/Eject
- || (PAUSE) : Pause

### ③ Deck II operation buttons

- (REC) : Recording
- ▶ (PLAY) : Playback
- ◀◀ (REW) : Rewind
- ▶▶ (FF) : Fast forward
- /▲ (STOP/EJECT) : Stop/Eject
- || (PAUSE) : Pause

### ④ DOLBY\* NR switch (■ OFF, ▬ ON)

\*

- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

### ⑤ Function display

#### ⑥ REC LEVEL ATT button (■ OFF, ▬ ON)/ COPY SPEED button (■ NORM, ▬ HIGH)

- If the sound is distorted, set this button to ON to attenuate the level and reduce distortion.
- When recording from one tape to another tape, this button can be used to switch between NORMAL SPEED and HIGH SPEED recording.

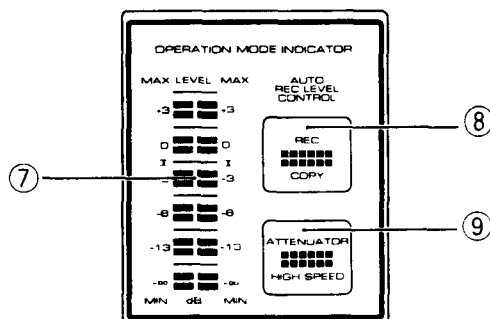
### ■ Dolby NR System

Dolby NR systems are designed to reduce the amount of tape hiss, mainly in the treble components. During recording, the high-pitched pianissimo sounds which are most characteristic of audible noise are boosted, and during playback, only these boosted sections are attenuated, so that the sound is returned to normal. As a result, the noise is attenuated by an amount equal to the boosting in the treble range. The Dolby NR ON system reduces noise in the treble range, cutting tape hiss and expanding the dynamic range.

#### NOTE:

When a tape has been recorded using the Dolby NR system, make sure that the DOLBY NR switch is set to the ON position during playback.

### Function display



### ⑦ Level meter

- The  between the -3 and 0 mark indicates the reference level for the Dolby NR system.

### ⑧ REC/COPY indicator

Lights up during recording or copying.

### ⑨ ATTENUATOR/HIGH SPEED indicator

- Lights up during recording when the REC LEVEL ATT switch is set to ON.
- Lights up during High speed copying.

9. SPECIFICATIONS

|                                                |                                              |
|------------------------------------------------|----------------------------------------------|
| System .....                                   | 4 track, 2-channel stereo                    |
| Heads .....                                    | "Hard Permalloy" recording/playback head x 1 |
|                                                | "Hard Permalloy" playback head x 1           |
|                                                | "Ferrite" erasing head x 1                   |
| Motor .....                                    | DC servo motor x 1                           |
| Wow and Flutter .....                          | 0.15% (WRMS, JIS)                            |
| Fast Winding Time .....                        | Approx. 115 seconds (C-60 tape)              |
| Frequency Response (at -20 dB recording level) |                                              |
| TYPE II (HIGH/CrO <sub>2</sub> ) tape.....     | 30 to 16,000 Hz                              |
| TYPE I (Normal) tape.....                      | 30 to 16,000 Hz                              |
| Signal-to-Noise Ratio                          |                                              |
| Dolby NR OFF .....                             | More than 56 dB                              |
| Noise Reduction Effect                         |                                              |
| Dolby NR ON .....                              | More than 10 dB (at 5 kHz)                   |
| Harmonic Distortion .....                      | No more than 1.0%                            |
|                                                | (at -4 dB: 160 nwb/m)                        |
| Input (Sensitivity)                            |                                              |
| LINE (INPUT).....                              | 112 mV (Input impedance 24 kΩ)               |
| Output (Reference level)                       |                                              |
| LINE (OUTPUT) .....                            | 0.5 V (Output impedance 1.9 kΩ)              |

Miscellaneous

|                        |                                |
|------------------------|--------------------------------|
| Power Requirements     |                                |
| Australian model ..... | AC 230 ~ 240 V, 50/60 Hz       |
| U.S. model.....        | AC 120 V, 60Hz                 |
| Power Consumption..... | 15 W                           |
| Dimensions .....       | 420 (W) x 130 (H) x 250 (D) mm |
| Weight .....           | 4.2 kg                         |

Accessories

|                                      |   |
|--------------------------------------|---|
| Operating instructions .....         | 1 |
| Connection cord with pin plugs ..... | 2 |

Features

- DOLBY NR
- Synchronized copy start
- High-speed and normal-speed copy (Deck I → Deck II)
- Relay playback (Deck II → Deck I)
- 6-segment LED level meter
- Automatic tape selectors
- Automatic recording level control
- REC LEVEL Attenuator

NOTE:

Specifications and design subject to possible modifications without notice due to improvements.